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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY-DOCKET NO.
097482,060	01/13/00	WIECZOREK	009629

009629
MORGAN, LEWIS & BOCKIUS
1800 M STREET NW
WASHINGTON DC 20036-5869

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KIM, C	EXAMINER
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ART UNIT 3/732	PAPER NUMBER
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DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/482,060

Applicant(s)
Wleczorek et al.

Examiner
Christopher S. Kim

Art Unit
3752



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 5 Oct 2001

2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-5 and 10-23 is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) 10-19 is/are allowed.

6) ☒ Claim(s) 1-5 and 20-23 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirements.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 13 Jan 2000 is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____.
- ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)

18) ☐ Interview Summary (PTO-413) Paper No(s). _____

16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

19) ☐ Notice of Informal Patent Application (PTO-152)

17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

20) ☐ Other: _____

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DETAILED ACTION

Request for Continued Examination

1. The request for continued examination (RCE) filed on October 5, 2001 for Application No. 09/482,060 is acceptable and an RCE has been established. An action on the RCE follows.

Response to Amendment

2. Amendment filed August 9, 2001 has been entered.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "at least one slot extending tangentially from the at least one fuel passage opening to the central aperture" recited in claim 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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Claim Rejections - 35 USC § 103

5. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek in view of Daly et al. and Munezane et al.

With respect to claims 1 and 3-5, Wieczorek discloses a fuel injector (also see Hensley, US Patent 4,610,080 per Wieczorek column 1, lines 61-62) comprising: a body 24 (4,610,080); an armature 26 (4,610,080); a cylindrical needle 12; a seat 14; a first surface 22, a second surface (external bottom of seat member 14), and a cut-out configuration 34. Wieczorek discloses a guide member 26 but does not disclose a swirl generator. Additionally, the seat of Wieczorek does not protrude from the outlet portion of the body.

Daly et al. disclose a swirl generator 18 which also functions as a guide member. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have replaced the guide member of Wieczorek with the swirl generator/guide member of Daly et al. to increase the divergence of the column of fuel.

Munezane et al. discloses, in figure 4, a seat 11 protruding from the outlet portion of the body 9. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have assembled the seat of Wieczorek to the body as taught by Munezane et al. to reduce the number of parts to ease manufacturing.

The function recitation “when the body is exposed to operating temperatures of a cylinder of an engine” is not a positively cited limitation which only requires the ability to so perform. As

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applicant has clarified in the response filed on October 5, 2001, applicant is not claiming a cylinder of an engine.

Wieczorek and Daly et al. are silent as to being a direct or non direct fuel injector. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have applied the teachings of Wieczorek in view of Daly et al. and Munezane et al. to a direct injection fuel injector to increase the divergence of the column of fuel.

With respect to claim 2, Wieczorek in view of Daly et al. and Munezane et al. discloses the limitations of the claimed invention with the exception of the range of the inner and outer diameter of the cylindrical annulus. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have made the inner diameter of the cylindrical annulus no more than 50% greater than the diameter of the cylindrical needle and the outer diameter of the cylindrical annulus no less than 100% greater than the inner diameter of the cylindrical annulus, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. 8 *In re Aller*, 105 USPQ 233.

6. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek in view of Daly et al.

With respect to claims 20 and 23, the limitations of the method of stabilizing temperature of a fuel injector are inherently met by operating the device of Wieczorek in view of Daly et al. The functional recitation "when the body is exposed to operating temperatures of an engine

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cylinder” is not a positively cited limitation. Wieczorek and Daly et al. are silent as to being a direct or non direct fuel injector. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have applied the teachings of Wieczorek in view of Daly et al. and Munezane et al. to a direct injection fuel injector to increase the divergence of the column of fuel.

With respect to claim 22, Wieczorek in view of Daly et al. discloses the limitations of the claimed invention with the exception of the range of the inner and outer diameter of the cylindrical annulus. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have made the inner diameter of the cylindrical annulus no more than 50% greater than the diameter of the cylindrical needle and the outer diameter of the cylindrical annulus no less than 100% greater than the inner diameter of the cylindrical annulus, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. 8 *In re Aller*, 105 USPQ 233.

With respect to claim 21, Wieczorek in view of Daly et al. discloses the limitations of the claimed invention with the exception of the body passage cross sectional area being less than 2.25 times the needle cross sectional area. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have made the body passage cross sectional area less than 2.25 times the needle cross sectional area, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. 8 *In re Aller*, 105 USPQ 233.

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Allowable Subject Matter

7. Claims 10-19 are allowed.

Response to Arguments

8. Applicant's arguments filed August 9, 2001 and October 5, 2001 have been fully considered but they are not persuasive.

In response to applicant's argument that the "at least one slot extending tangentially from the at least one fuel passage opening to the central aperture" recited in claim 10 is shown as indicated by reference sign 100 in figures 2a and 2b, the tangential relationship is not shown in any of the figures.

In response to applicant's argument that no motivation is provided because Wieczorek and Daly et al. disclose low pressure non-direct fuel injectors, applicant's assertion that Wieczorek and Daly et al. disclose low pressure non-direct fuel injectors is unsupported by facts.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Daly et al. discloses, in column 1, lines 29-47, enhanced spray pattern as

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a result of the swirler/guide. Wieczorek discloses in figure 1 the seat 14 held in the body by an additional element (below the seat). Munezane et al. discloses a seat 11 which is held in the body with no additional element. It is knowledge generally available to one of ordinary skill in the art to ease manufacturing by reducing the number of parts.


In response to applicant's argument that Munezane et al. is not applicable as prior art reference, claims 1-5 are not entitled to the benefit of the filing date of US Patent 5,875,972. Claims 1 and 3 recite "a seat protruding from the outlet portion of the body" which is not supported by US Patent 5,875,972. Munezane et al. has not been applied to claims 20-23.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher S. Kim whose telephone number is (703) 308-8336. The examiner can normally be reached on Monday-Thursday from 6:30 a.m. to 5:00 p.m.

The fax phone number for this Group is (703) 308-7766.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.


Christopher S. Kim
Examiner
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CK
November 3, 2001